AMENDMENTS TO THE CLAIMS:

1. (Original) A method for manipulating a plurality of particles by forming and moving a plurality of optical traps, the method comprising:

providing at least one laser beam from at least one source;

applying the at least one laser beam to diffraction means for simultaneously creating a plurality of separate laser beams from each of the at least one laser beam;

establishing an optical gradient for each of the plurality of separate laser beams to form a plurality of separate optical traps for moving the plurality of particles; and

performing a manufacturing process which changes the position of at least one of the plurality of particles.

2. (Original) The method of claim 1, wherein the manufacturing process step is selected from the group consisting of manipulating particles in a photonic circuit, manipulating components in a nanocomposite, fabricating electronic components, manipulating opto-electronic components, preparing a chemical sensor, preparing a biological sensor, assembling holographic data storage matrices, assembling colloidal arrays, and manipulating the structure of biological materials.

3. (Original) The method of claim 1, wherein the diffraction means is comprised of a time addressable phase-shifting medium.

4. (Original) The method of claim 1, wherein the step of moving the plurality of particles comprises the step of dynamically changing locations of at least one of the plurality of optical traps.

5. (Original) The method of claim 1, further comprising the step of applying to the

plurality of laser beams a transfer optical element which interacts with the laser beams to transfer an optical point of an optical train to another optical point location.

6. (Original) The method of claim 1, further comprising the step of moving the plurality of particles by translating at least one of laterally and axially the optical traps relative to an optical axis.

7. (Original) The method of claim 1, wherein the step of establishing an optical gradient comprises the step of focusing at least one of the laser beams.

8. (Original) The method of claim 1, further comprising the step of converging selected ones of the laser beams and forming the optical traps at spatial locations selected from the group consisting of positions in a focal plane and positions out of a focal plane of an objective lens disposed in an optical train path of the laser beams.

9. (Original) The method of claim 1, further comprising the step of moving the plurality of particles by moving a sample stage relative to a specimen comprising the trapped particles.

10. (Original) The method of claim 1, wherein the performing the manufacturing process comprises the step of moving the plurality of particles by moving the plurality of laser beams and associated ones of the optical traps by action of a mirror disposed at a point conjugate to a back aperture of a focusing element.

11. (Original) The method of claim 1, further comprising a focusing element and the diffractive optical element is positioned in the back focal plane of the focusing element.

12. (Original) A method for manipulating a plurality of particles by forming and moving a plurality of optical gradient fields, the method comprising:

providing at least one laser beam from at least one source;

applying the at least one laser beam to diffraction means for simultaneously creating a plurality of separate laser beams from each said at least one laser beam;

establishing an optical gradient field for each of the plurality of separate laser beams for at least one of trapping and moving the plurality of particles; and

performing a manufacturing process which changes the position of at least one of the plurality of particles.

13. (Original) The method of claim 12, wherein the manufacturing process step is selected from the group consisting of manipulating particles in a photonic circuit, manipulating components in a nanocomposite, fabricating electronic components, manipulating opto-electronic components, preparing a chemical sensor, preparing a biological sensor, assembling holographic data storage matrices, assembling colloidal arrays, and manipulating the structure of biological materials.

14. (Original) The method of claim 12, wherein the diffraction means is comprised of a time addressable phase-shifting medium.

15. (Original) The method of claim 12, wherein the step of moving the plurality of particles comprises the step of dynamically changing locations of at least one of the plurality of optical gradient field.

16. (Original) The method of claim 12, further comprising the step of applying to the

plurality of laser beams a transfer optical element which interacts which the laser beams to transfer an optical point of an optical train to another optical point location.

17. (Original) The method of claim 12, further comprising the step of moving the plurality of particles by translating at least one of laterally and axially the optical gradient fields relative to an optical axis.

18. (Original) The method of claim 12, wherein the step of establishing an optical gradient field comprises the step of focusing at least one of the laser beams.

19. (Original) The method of claim 12, further comprising the step of converging selected ones of the laser beams and forming the optical gradient fields at spatial locations selected from the group consisting of positions in a focal plane and positions out of a focal plane of an objective lens disposed in an optical train path of the laser beams.

20. (Original) The method of claim 12, further comprising the step of moving the plurality of particles by moving a sample stage relative to a specimen comprising the trapped particles.

21. (Original) The method of claim 12, wherein the performing a manufacturing process step comprises moving the plurality of particles by moving the plurality of laser beams and associated ones of the optical gradient fields by action of a mirror disposed at a point conjugate to a back aperture of a focusing element.

22. (Original) The method of claim 12, further comprising a focusing element and the diffractive optical element is positioned in the back focal plane of the focusing element.